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Name: _____ Score: _____

1. A 100-byte payload leaves with how many Ethernet+IP+TCP header bytes?

☐ 54

☐ 34

☐ 44

☐ 64

2. Crossing 3 routers, the destination IP –

☐ is dropped

☐ changes once

☐ stays fixed end to end

☐ changes each hop

3. Destination 10.1.2.200 with /8, /16 and /24 entries present goes to –

☐ the /16 next hop

☐ the /24 next hop

☐ the default

☐ the /8 next hop

4. The UDP header carries –

☐ sequence numbers

☐ three ACKs

☐ a window

☐ ports, length, checksum

5. DNS delegation means the root answers with –

☐ a referral to the TLD

☐ a cache only

☐ the final address

☐ an error

6. Integrity without confidentiality still –

☐ prevents neither

☐ prevents both

- ☐ prevents reading
 - ☐ prevents alteration
7. A timeout means –
- ☐ the work failed
 - ☐ you do not know
 - ☐ the clock broke
 - ☐ the work succeeded
8. Ethernet could evolve under identical IP because –
- ☐ the link service interface held
 - ☐ IP changed too
 - ☐ browsers rewrote
 - ☐ MACs grew
9. IHL = 5 means the header is –
- ☐ 20 bytes
 - ☐ 10 bytes
 - ☐ 5 bytes
 - ☐ 40 bytes
10. On the course graph, node F settles at –
- ☐ 14
 - ☐ 13
 - ☐ 11
 - ☐ 15

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1. **54**

$14 + 20 + 20 = 54$: one header per layer crossed.

2. **stays fixed end to end**

MAC names the neighbour and changes; IP names the stranger and never does.

3. **the /24 next hop**

Longest prefix match: three match, the /24 is most specific.

4. **ports, length, checksum**

8 bytes: two ports, a length, a checksum - the postcard.

5. **a referral to the TLD**

Each level refers downward; the authoritative server holds the host record.

6. **prevents alteration**

A MAC catches alteration; encryption catches reading - separate defenses.

7. **you do not know**

The third outcome: the request may or may not have landed - retry idempotently.

8. **the link service interface held**

The service (best-effort frames) never changed, so the layer above never noticed.

9. **20 bytes**

IHL counts 32-bit words: $5 \times 4 = 20$ bytes.

10. **13**

A C B D E F: $2 + 1 + 5 + 2 + 3 = 13$ - via E beats D direct (14).